IN THE CLAIMS

1. (Currently Amended) A method for manufacturing at least a first photonic device, comprising the steps: a) epitaxially growing a first set of layers ~~(22)~~, including at least a first waveguide layer ~~(3)~~, on a semiconductor material ~~(1)~~ Having a dopant of a first type, b) applying a first mask ~~(21, 53)~~ on top of the grown layers ~~(22)~~, removing the first set of layers in the unmasked areas, to form at least said first set of layers in a first waveguide mesa ~~(61)~~, and removing the first mask ~~(21)~~, c) epitaxially growing a cladding layer ~~(7)~~ at least on top of said first waveguide mesa ~~(61)~~, said cladding layer having a dopant of a second type, opposite to said first type d) epitaxially growing a contact layer ~~(8)~~ on top of the cladding layer ~~(7)~~, and e) arranging a first metal contact ~~(9, 80)~~ on top of the contact layer ~~(8)~~, above said first set of layers ~~(22)~~, ~~characterized in that~~wherein the method comprises the additional steps: f) etching the contact layer ~~(8)~~ and the cladding layer ~~(7)~~, using a second mask ~~(9, 70, 71)~~ covering the first waveguide mesa ~~(61)~~, in the unmasked areas, and applying insulating material ~~(25, 82)~~ in the areas not covered with the second mask ~~(9, 70, 71)~~ during etching in step f).

2. (Currently Amended) The method according to claim 1, wherein the method further comprises the additional steps prior to step c) : bi) epitaxially growing a thin layer ~~(23)~~ the second type on and around the first waveguide mesa, and h2) epitaxially growing an etch stop layer ~~(24)~~ on top of the thin layer grown in step bi), whereby the etching in step f) is stopped by the etch stop layer ~~(24)~~ grown in step b2).

3. (Currently Amended) The method according to ~~any of claims 1-2~~ claim 1, wherein said semiconductor material ~~(1)~~ is an epitaxially grown layer on top of a substrate.

4. (Original) The method according to claim 3, wherein said substrate is a semi-insulating substrate, or a semiconductor substrate having a dopant of the first or the second type.

5. (Currently Amended) The method according to ~~any of claims 1-4~~ claim 1, wherein said is semiconductor material ~~(1)~~ is a semiconductor substrate.

6. (Currently Amended) The method according to ~~any of claims 1-5~~ claim 1, wherein said first photonic device is selected to be any of the group: laser, detector and amplifier.

7. (Currently Amended) The method according to ~~any of claims 1-6~~ claim 1, wherein said first mask ~~(21, 53)~~ is dimensioned to define the width of said first waveguide mesa ~~(61)~~ to achieve single mode operation of said first photonic device.

8. (Currently Amended) The method according to ~~any of claims 1-7~~ claim 1, wherein the following steps are performed prior to step e): applying the second mask ~~(70, 71)~~ on the contact layer ~~(8)~~, -performing step f), - removing said second mask ~~(70, 71)~~, and - performing step g).

9. (Currently Amended) The method according to claim 8, wherein the second mask ~~(70, 71)~~ is a metal mask, preferably made from Titanium.

10. (Currently Amended) The method according to ~~any of claims 1-7~~ claim 1, wherein said first metal contact ~~(9)~~ arranged on top of the contact layer 5 in step e) is used as the second mask in step f).

11. (Currently Amended) The method according to ~~any of claims 8-9~~ claim 8, wherein at photonic device is optically connected with the device, the method comprising the additional step b): a1) applying an island mask ~~(30)~~ on top of the first set of layers ~~(22)~~ and removing the first set of layers in the unmasked areas, a2) epitaxially growing a second set of layers ~~(31)~~ for the second photonic device, including at least a second waveguide layer ~~(33)~~, on the semiconductor material ~~(1)~~ in the unmasked areas, and thereafter removing the island mask ~~(30)~~, thereafter modifying step b) so that said first mask ~~(53)~~ also include to cover at least a part of said second set of grown layers ~~(31)~~, thus also forming a second photonic device region ~~(62)~~ coupled to said first photonic device in a light transmission direction, and modifying step c) to include growing said cladding layer ~~(7)~~ on top of said second set of layers ~~(31)~~ in addition to said first set of layers ~~(22)~~, modifying step e) to include arranging a second metal contact ~~(81)~~ on top of the contact layer ~~(8)~~, above said second set of layers ~~(31)~~, said first ~~(80)~~ and second ~~(81)~~ metal contacts being separated, modifying step f) to include using a second mask ~~(70, 71)~~ covering at least a part of said second set of layers ~~(31)~~, in addition to covering the first waveguide mesa, and modifying step g) to include applying insulating material ~~(82)~~ in the areas not covered with the second mask ~~(70, 71)~~.

12. (Currently Amended) The method according to claim 11, wherein the method further comprises the additional steps prior to step c): b3) epitaxially growing a thin layer ~~(23)~~ having a dopant of the second type on and around the second photonic device region ~~(62)~~, and b4) epitaxially growing an etch stop layer ~~(24)~~ on top of the thin layer ~~(23)~~ grown in step b3), whereby the etching in step f) is stopped by the etch stop layer grown in step b4).

13. (Currently Amended) The method according to ~~any of claims 11-12~~ claim 11, wherein said second photonic device is selected to be a modulator.

14. (Currently Amended) The method according to ~~any of claims 1-13~~ claim 1, wherein the method further comprises the step of providing a window section ~~(72)~~ adjacent to the first or the second photonic device in a light transmission direction thereof, where said second mask ~~(70, 71)~~ applied in step f) further include a window masking part.

15. (Original) The method according to claim 14, wherein said window masking part is selected to have a tapered shape.

16. (Currently Amended)The method according to ~~any of claims 1-15~~ claim 1, wherein said insulating material ~~(25, 82)~~ is selected to be a material which is easily planarised, preferably polymer.

17. (Currently Amended) A photonic device including at least a first photonic device comprising: a first set of epitaxially grown layers ~~(22)~~, including at least a first waveguide layer ~~(3)~~, arranged in a waveguide mesa ~~(61)~~ on top of a semiconductor material ~~(1)~~ having a dopant of a first type, a cladding layer ~~(7)~~ having a dopant of a second opposite to said first type, first set of layers ~~(22)~~ and the surrounding semiconductor material ~~(1)~~, a contact layer ~~(8)~~ arranged on top of the cladding layer ~~(7)~~, and a metal contact ~~(9, 80, 81)~~, for each photonic device, arranged on top of the contact layer ~~(8)~~, ~~characterized in that~~ wherein said cladding ~~(7)~~ and contact ~~(8)~~ layer are shaped in an etching process to have a first contact mesa structure at least above the first waveguide mesa ~~(61)~~, the photonic device further comprises: an insulating material ~~(25, 82)~~ applied around the first contact mesa structure, said insulating material having a thickness corresponding to approximately the combined thickness of the cladding ~~(7)~~ and the contact ~~(8)~~ layer.

18. (Currently Amended) The device according to claim 17, wherein a thin layer ~~(23)~~ having a dopant of the second type is arranged on and around the first waveguide mesa ~~(61)~~, and an

etch stop layer ~~(24)~~ is arranged on top of the thin layer ~~(23)~~, whereby the etching of the cladding ~~(7)~~ and contact ~~(8)~~ layer, to shape the first contact mesa structure, is stopped by the etch stop layer ~~(24)~~.

19. (Currently Amended) The device according to ~~claim 17 or 18~~ claim 17, wherein said device further comprises at least a second photonic device, optically connected to said first photonic device, said second photonic device comprising: a second set of epitaxially grown layers ~~(31)~~, including at least a second waveguide layer ~~(33)~~, formed in a second photonic device region ~~(62)~~ being, coupled to said first photonic device in a light transmission direction, on top of the semiconductor material ~~(1)~~, and said cladding ~~(7)~~ and contact ~~(8)~~ layer are arranged on top of each second photonic device region ~~(62)~~.

20. (Currently Amended) The device according to claim 19, wherein said cladding ~~(7)~~ and contact ~~(8)~~ layer also are shaped to have a second contact mesa structure above a part of said second photonic device region ~~(62)~~, said first and second contact mesa structure being adjacent to each other.

21. (Currently Amended)The device according to claim 20, wherein a thin layer ~~(23)~~ having a dopant of the second type is arranged on said second photonic device region ~~(62)~~, and an etch stop ~~(24)~~ layer is arranged on top of the thin layer ~~(23)~~, whereby the etching of the cladding ~~(7)~~ and contact ~~(8)~~ layer, to shape the second contact mesa structure, are stopped by the etch stop layer ~~(24)~~.

22. (Currently Amended) The device according to ~~any of claims 17-21~~ claim 17, wherein said first photonic device is any of the group: laser, detector and amplifier.

23. (Currently Amended) The device according to ~~any of claims 19-22~~ claim 19, wherein said second photonic device is a modulator.

24. (Currently Amended) The device according to ~~any of claims 19-22~~ claim 19, wherein said device is provided with a window section ~~(72)~~ arranged adjacent to said first or second photonic device in a light transmission direction thereof, said window section preferably tapered.

25. (Currently Amended) The device according to ~~any of claims 17-24~~ claim 17, wherein

said semiconductor material ~~(1)~~ is an epitaxially grown layer on top of a substrate.

26. (Original) The device according to claim 25, wherein said substrate is a semi-insulating substrate, or a semiconductor substrate having a dopant of the first or the second type.

27. (Currently Amended) The device according to ~~any of claims 17-24~~ claim 17, wherein said semiconductor material ~~(1)~~ is a semiconductor substrate.

28. (Currently Amended) The device according to ~~any of claims 17-27~~ claim 17, wherein said insulating material ~~(25, 82)~~ is a material which is easily planarised, preferably polymer.